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## Bacterial cell surface charge, attachment and decontamination on melon rind surfaces

The ability of pathogenic bacteria to adhere to surfaces of fruits and vegetables continues to be a potential food safety problem for the produce industry and consumers alike. Presence of human bacterial pathogens in fresh produce and outbreaks of diseases has led to costly recalls. Fruits and vegetables are frequently in contact with soil, insects, animals, and humans during growing, harvesting, and in the processing plant. In this study, the bacterial cell surface charge in relation to attachment on melon surfaces and decontamination with hot water and sanitizers was investigated. Cell surface charge of individual strains of *Listeria monocytogenes* serovars, *E. coli* and *E. coli* O157:H7 and *Salmonella* spp. were estimated and attachment to melon surfaces was initiated. Contaminated melons were subjected to water and hot water treatment including washing in 200 ppm chlorine and hydrogen peroxide at 3% for 5 min. The initial bacterial attachment was highest for individual strains of *E. coli* and lowest for *L. monocytogenes*. Following decontamination treatment, *Salmonella* exhibited stronger attachment than *E. coli* and *L. monocytogenes*. When mixed genera cocktails were used the relative degree of attachment of the three genera was altered. A linear correlation between bacterial cell surface hydrophobicity ( $r^2=0.767$ ), negative charge ( $r^2=0.738$ ), and positive charge ( $r^2=0.724$ ) and their strength of attachment to melon surfaces was observed.

## Biography

Dike O Ukuku has 27 years of professional experience in food technology, food chemistry and food microbiology in Universities, Industry and Government. He has authored more than 70 publications in different scientific journals including 9 proceeding papers, 8 invited book chapters, and 1 text book. He has made over 100 international and national presentations. He is a fellow of the Japan Society for the Promotion of Science (JSPS-Fellow) and also a King-Chavez-Parks future faculty fellow, a member of the science advisory board. He is an editor of three scientific journals and also is on the editorial board membership of applied and environmental microbiology, Journal of Food Science, Journal of Food Protection, International Journal of Food Microbiology, Hortscience, Journal of Food Technology and Processing including food technology as an in depth subject matter expert for manuscripts submitted to the journals.

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